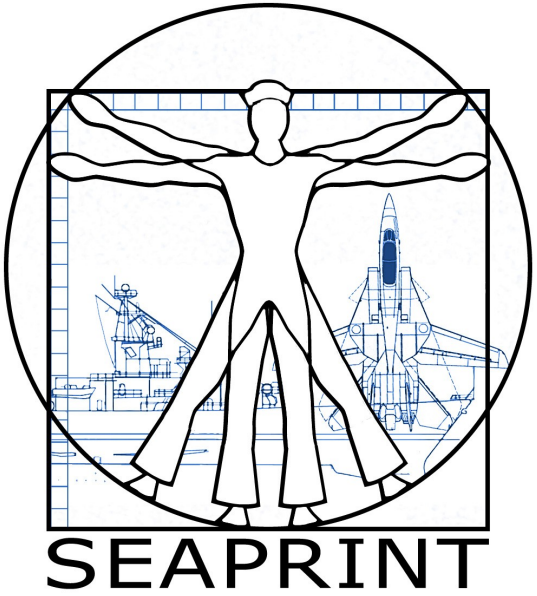


Systems Engineering, Acquisition and PeRsonnel INTegration

Nancy Dolan
nancy.dolan@navy.mil
703-614-5781

Last Year (2003)

- Mandate for MANPRINT-like program
- Realized “cut and paste” wasn’t going to wo
- Identified Navy challenges in standardizing H

This Year (2004)

- Describe work to adapt MANPRINT
- Explain SEAPRINT Program
  - SEAPRINT History
  - Where does SEAPRINT fits in?
  - What is SEAPRINT?
  - 7 “Tenets” of SEAPRINT
- Discuss “What’s Next”

How Did SEAPRINT Come About?

Manpower KPP

Executive Review of Navy Training

Improving the Navy's Workforce (INWF)

Acquisition Reform (CJCSI 3170, DoD 5000)

Revolution in Training (RIT)

Sea Power 21 / Sea Warrior

Capabilities-Based Planning / Navy Capability Development Process

2000

2001

2002

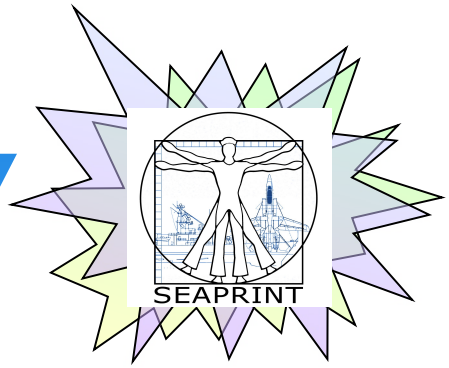
2003

2004+

Congressional Mandates

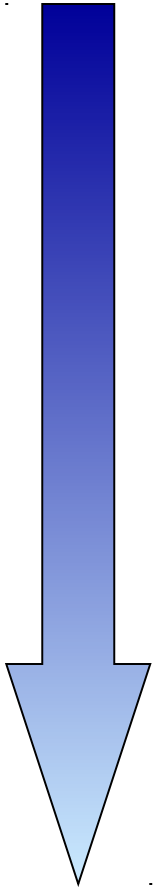
Adapt MANPRINT
Apply IMPRINT

Integrate HSI and "force management"



Where Does SEAPRINT Fit?

Level of Detail –
NOT Hierarchy



WHAT

Joint Capabilities Development Integration System
(CJCSI 3170.01D)

Defense Acquisition Process
(DoDI 5000.2)

Navy Acquisition Process
(SECNAVINST 5000.2C)

SEAPRINT
(OPNAVINST 1530.XX)

HOW

SYSCOM HSI Policy & Guidance

NAVSEA *(NAVSEAINST XXX)*
NAVAIR *(NAVAIRINST XXX)*
SPAWAR *(SPAWARINST XXX)*

Domain Analysis Policy & Guidance

Manpower & Personnel *(OPNAVINST 1000.16X)*
Training *(OPNAVINST 1500.XX)*
Habitability *(OPNAVINST 9640.01X)*
Safety & Occ Health *(MIL-STD-882D)*

EXAMPLE

DOTMLPF implications & constraints considered as part of capability

Domain requirements identified as part of total system approach

HSI requirements included in ICD & CDD

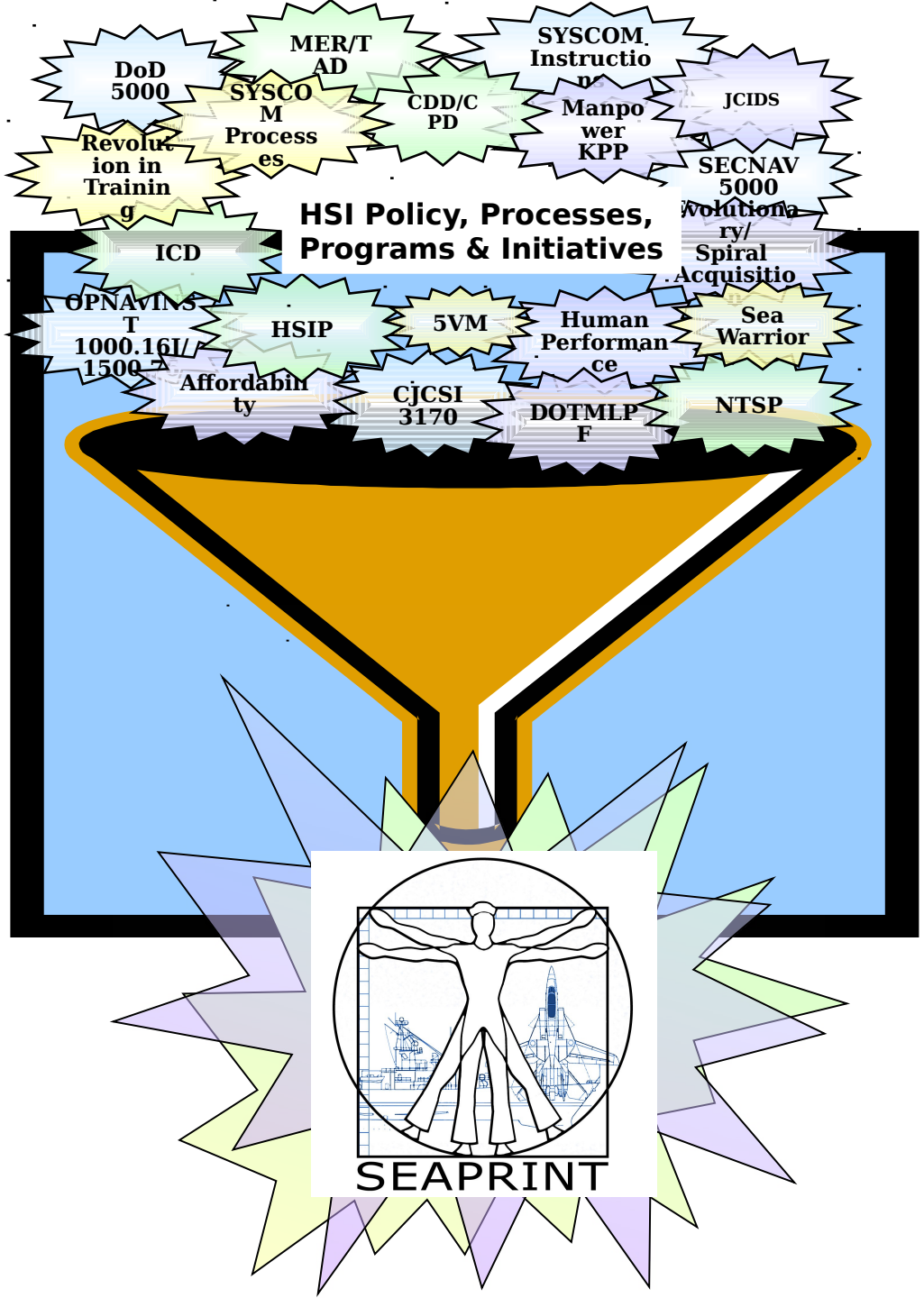
Cross-walk HSI requirements from CD to CDD to MER to NTSP to TEMP

Conduct top-down functional analysis to identify design specifications and human interface requirements

Identify workload hours to determine manpower requirements

Conduct baseline comparison analysis to determine training requirements

Perform preliminary hazard analysis to support safety risk assessment



SEAPRINT:

Provides the **policy and documentation requirements** for fulfilling Navy's HSI responsibilities in accordance with CJCSI 3170 (series), DoD 5000 (series) and SECNAVINST 5000.2

Navy Enterprise Approach to H

to addressing DoD and DoN HSI policy processes, programs and initiatives

Standardizes HSI execution across Navy
Ensures all aspects of HSI are addressed
Facilitates HSI analyses

Management & Technical Progr

Integration of human considerations in system acquisition to:

- Enhance human/system design
- Reduce life cycle ownership costs
- Optimize total system performance

Congressional Mandate

SEAPRINT:

Builds off 8 “MANPRINT Enablers”

MANPRINT Enablers:

1. MANPRINT included from the beginning
2. MANPRINT Practitioners involved to identify/work issues
3. Testable HSI requirements clearly defined
4. MANPRINT requirements in contract language
5. MANPRINT Assessments
6. Senior –level support for MANPRINT
7. Educated/Experienced MANPRINT Practitioners

Consolidates over 200 DoD and DoN Human Systems Integration (HSI) policy and process requirements
Simplifies them into 7 actionable tenets

Articulates what PMs need to do, and when, to accomplish the tenets and meet the DoD and DoN HSI requirements

SEAPRINT Tenets

7 Actionable Tenets:

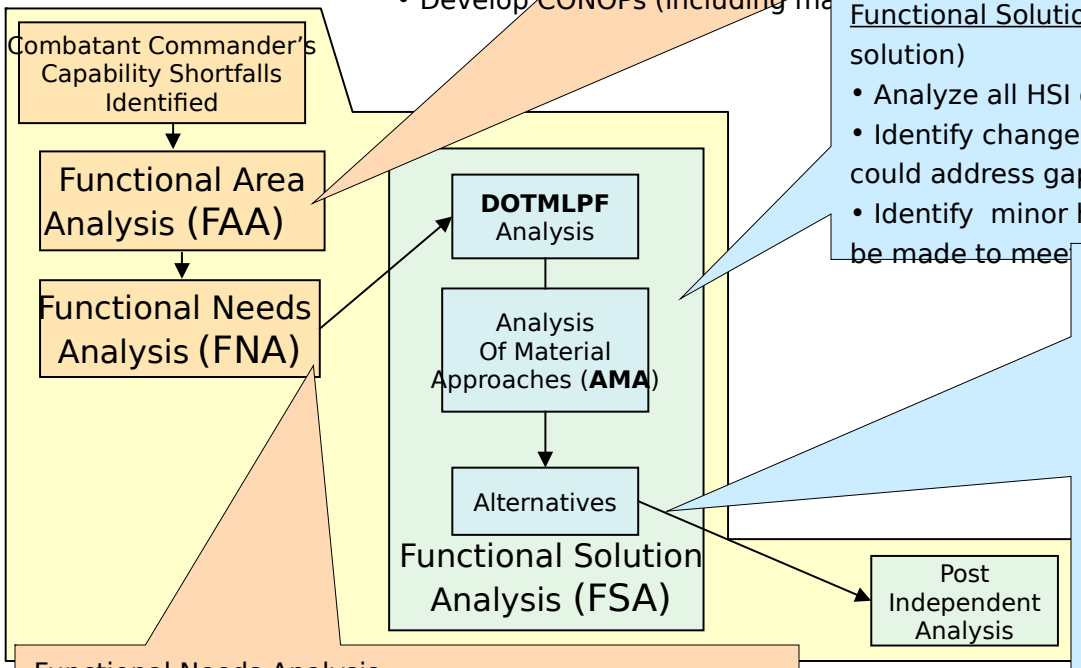
1. Initiate HSI early
2. Identify Issues – Plan Analysis
3. Document/Crosswalk HSI Requirements
4. Make HSI a Factor in Source Selection
5. Execute Integrated Technical Process
6. Conduct Proactive Trade-Offs
7. Conduct HSI Milestone Assessments

SEAPRINT Tenet # 1: *Initiate HSI Early*

Functional Area Analysis
- Include consideration for the role of operators, maintainers, support personnel
- Highlight critical tasks that must/most likely will be assigned to humans
- Identify cross-capability/system tasks, conditions and standards
- Use/Influence of Joint personnel issues
- Develop CONOPs (including ma

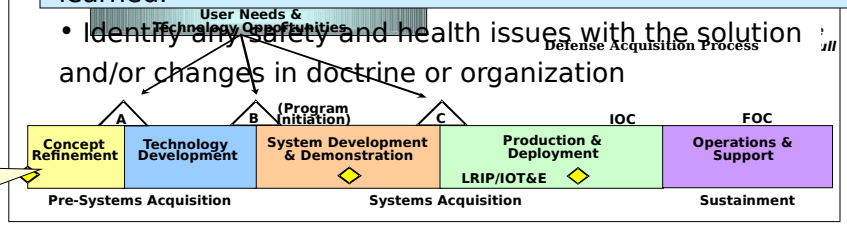
Functional Solution Analysis – DOTMLPF (Before materiel solution)
- Analyze all HSI domains as part of DOTMLPF
- Identify changes in manpower, personnel and/or training that could address gap
- Identify minor human factors engineering changes that could be made to mee

Functional Solution Analysis – DOTLPF (after materiel solution)
- Analyze the HSI implications of the materiel solution
- Determine if the solution will likely require increases in manpower.
- Determine the offsets.
- Determine what manpower is affordable.
- Determine if the solution will likely require different types of people or new skill sets.
- Assess how likely the MPT community is to be able to deliver the required new people in the necessary timeframe.
- Identify HSI constraints and req'ts based on lessons learned.
- Identify any safety and health issues with the solution and/or changes in doctrine or organization



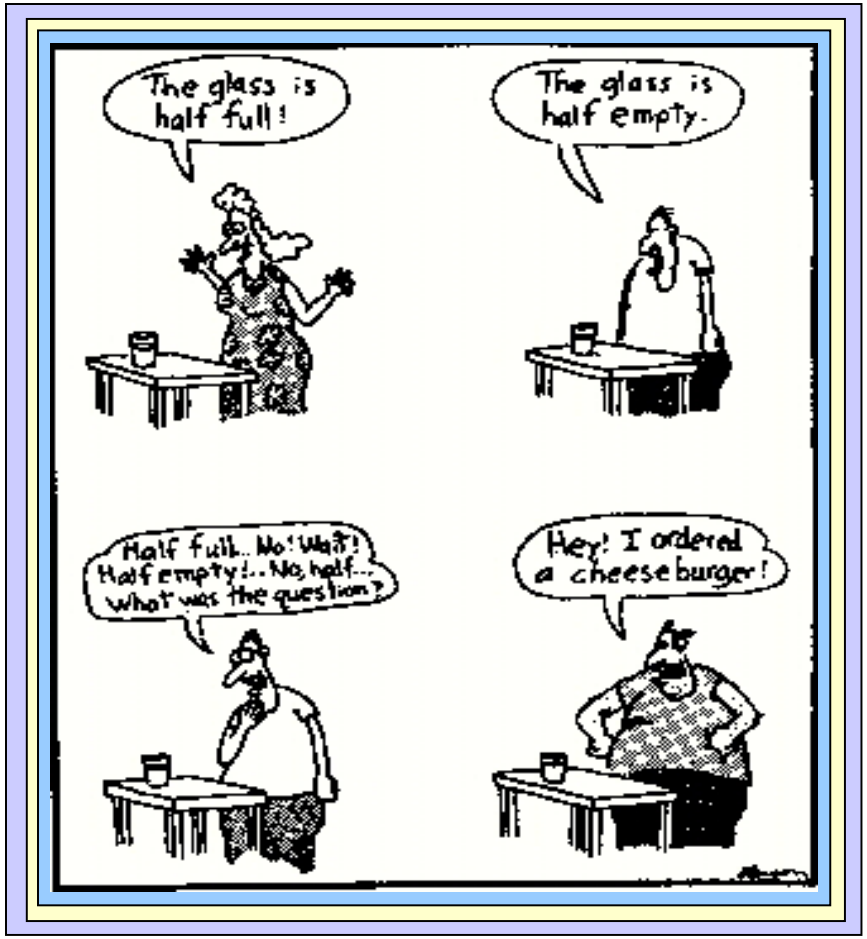
Functional Needs Analysis
- Assess ability of the current and projected personnel inventory to accomplish tasks identified in FAA
- Output should include a list of the personnel-related issues (inventory gaps or force structure shortfalls

Documentation Development
- Develop inputs to Initial Capabilities Document
- Identify key HSI parameters for the Analysis of Alternatives/



SEAPRINT Tenet # 2: *Identify Issues – Plan Analysis*

Program-Specific, Issue-Oriented


The glass is half full!
The glass is half empty.
Half full.. No! Wait! Half empty!.. No, half... what was the question?
Hey! I ordered a cheeseburger!

Issue Identification and Tracking

- Identification Code
- Title
- Criticality
- Issue Summary
- Operational Impact if Not Resolve
- Recommended Solution/Mitigatio
- Lead/Assist Responsibility
- Current Status

* *Provides audit trail for HSI assessment*

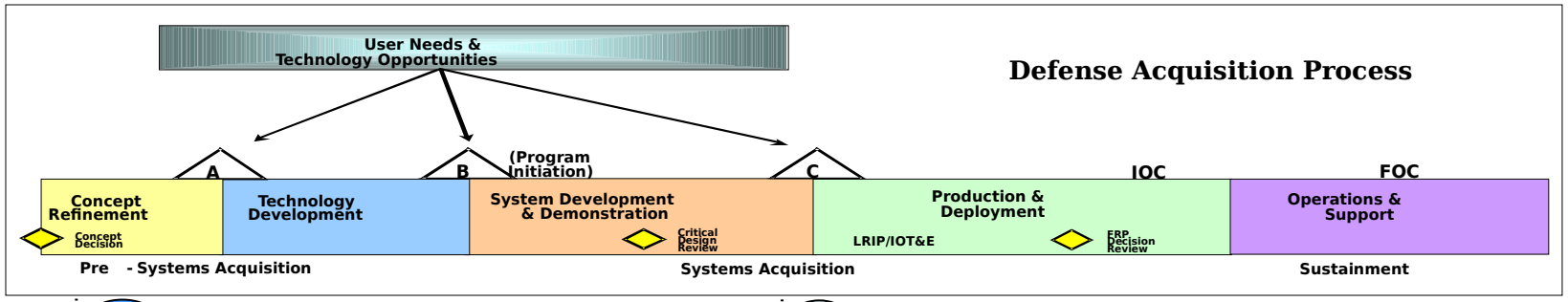
Analysis Planning

HSI analyses should address the specific HSI issues of an individual capability development effort.

* *HSIP may include both issues and analysis planning.*

SEAPRINT Tenet # 3 & 4:

Document/Crosswalk HSI Requirements
Make HSI a Factor in Source Selection



TAD ICD SSMP HSIP CDD AS APB TEMP MER NTSP RFP/SSC CPD MER Update NTSP Update RFP/SSC MER Update NTSP Update RFP/SSC

KEY

TAD – Target Audience Description
SSMP – System SEAPRINT Management Plan
HSIP – Human Systems Integration Plan
MER – Manpower Estimate Report
NTSP – Navy Training Systems Plan
RFP/SSC – Request for Proposal/ Source Selectio

TAD: Based on initial capability analyses, identify characteristics of target audience and known gaps in inventory.

ICD: Based on initial capability analysis and TAD, identify HSI implications and constraints.

HSIP & SSMP: Based on ICD and TAD, identify HSI issues and challenges. Develop strategy for addressing/analyzing.

CDD & APB: Based on initial analyses determine HSI requirements. Identify appropriate HSI KPPs.

RFP/SSC: Design contracts should contain HSI CDRLs consistent with CDD requirements. HSI should be a key factor in source selection.

MER & NTSP: MPT requirements should reflect results of analyses listed in HSIP, address SSMP issues and be consistent with ICD & CDD.

TEMP: Identify test elements that evaluate solutions to HSI issues in SSMP and measure HSI requirements in CDD.

CPD: HSI requirements should reflect T& results and be based on what analysis shows is realistic.

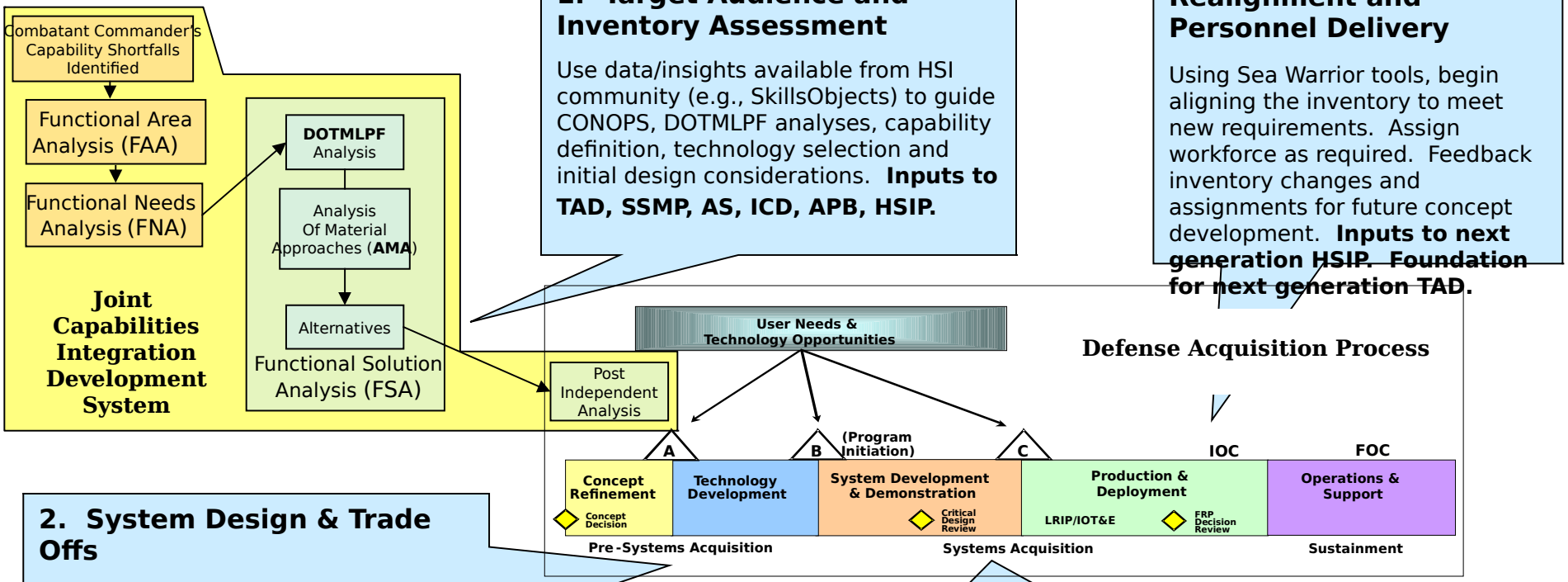
MER & NTSP: Updated MPT requirements should reflect results of T&E, design changes and be consistent with the CPD HSI requirements.

MER & NTSP: Last minute changes to design may require updates to MPT requirements.

SEAPRINT Tenets # 5 & 6:

Execute Integrated Technical Process

Conduct Proactive Trade-Offs



1. Target Audience and Inventory Assessment

Use data/insights available from HSI community (e.g., SkillsObjects) to guide CONOPS, DOTMLPF analyses, capability definition, technology selection and initial design considerations. **Inputs to TAD, SSMP, AS, ICD, APB, HSIP.**

4. Inventory Realignment and Personnel Delivery

Using Sea Warrior tools, begin aligning the inventory to meet new requirements. Assign workforce as required. Feedback inventory changes and assignments for future concept development. **Inputs to next generation HSIP. Foundation for next generation TAD.**

2. System Design & Trade Offs

Identify HSI issues. Use HFE to analyze/allocate human functions. Identify design parameters. Determine projected manpower and KSAs for new system. Compare to TAD. Assess current inventory. Determine gaps. Make adjustments/ trade-offs. **Inputs to SSMP, HSIP, CDD, TEMP, MER, NTSP.**

3. Integrated Technical Process

Use HFE to refine system to meet required human performance. Determine final HSI requirements. Identify changes required to realign inventory to meet new needs. **Inputs to SSMP, HSIP, CPD, and updates to MER and NTSP.**

SEAPRINT Tenet # 7:
Conduct HSI Assessments

Purpose

Determine status and adequacy of HSI effort
Present unresolved issues to decision makers

When

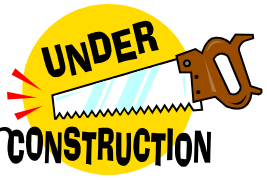
Prior to Milestone or major design Review

Scope

User concerns
Program risks
Manpower affordability
Training (issues & devices)
Human-system interfaces
Documented resolutions
Time lines
Test results
HSI requirements in documentation
Completeness

Process

Utilize SYSCOM independent HSI reviews
Need “out-of-chain” reporting mechanism



What's Next

Continue Developing SEAPRINT Process

Acquisition Documentation Guidance

- Target Audience Description (TAD)
- ICD/CDD/CPD
- Manpower Estimate Report (MER)
- Navy Training Systems Plan (NTSP)

HSI Assessment Process

Develop SEAPRINT Policy

OPNAVINST 5310.XX

In conjunction with update of Army AR 602-2

Share Sea Warrior Lessons Learned with Ground Warrior